Today’s Objectives

Which one do I use? Which one is right for my project?
Hosts and Panelists

01 Dr. Shane Hubbard
Space Science and Engineering Center
Cooperative Institute for Meteorological Satellite Studies
University of Wisconsin - Madison

02 Danielle Sharpe, MSc
Geospatial Epidemiologist
Coordinator of the CDC Social Vulnerability Index
Contractor at Perspecta

03 Benjamin C. Rance
Management & Program Analyst - Technical Assistance Branch
National Integration Center | National Preparedness Directorate
Agenda

• 1:00 – 1:05pm Welcome and Introductions
• 1:05 – 1:10pm URISA Community Resilience Committee Social Indices Focus Group – Dr. Shane Hubbard, University of Wisconsin / URISA CRC Chair
• 1:10 – 1:30pm CDC Social Vulnerability Index (SVI) – Danielle Sharpe, MSc Centers for Disease Control and Prevention (Contractor at Perspecta)
• 1:30 – 1:50pm FEMA’s Community Resilience Indicator Analysis (CRIA) / Resilience Analysis and Planning Tool (RAPT) – Benjamin C. Rance, FEMA
• 1:50 – 1:57pm Demonstration Guidance on Risk, Resilience, and Vulnerability Indices
• 1:57 – 2:00pm Closing
About NAPSG Foundation

Our Vision
A Nation of emergency responders and leaders equipped with the knowledge and skills in applying technology and data to change the outcome for survivors.

• 501(c)(3) Non-profit organization established in 2005
• +20,000 member network: Public Safety leaders, first responders, and GIS practitioners
• Board of Directors comprised of public safety & emergency management industry leaders
Local Focus – National Reach

- 20,000+ member network
- 12 primary national & international associations
- All disciplines
- All levels of government
- Private sector

Virtual Training participants with contact details redacted.
First Responders, Operators, and Decision Makers have access to and know how to use the **right actionable information** at the right time.
How Do We Do It

- Defining and promulgating consistent best practices
- Fostering regional collaboration through implementation
- Transferring knowledge and skills
- Building capacity in using innovative technology
- Education & Training
- Exercises & Simulations
- National Guidelines and Standards

napsgfoundation.org | @napsgfoundation
Resource Library

Welcome to NAPSG’s Resource Library. Here you can access all of the key resources that NAPSG makes available to the community at no cost, to support you and your agency in advancing the use of location-enabled decision support tools.

The Resource Library is organized by resource category. Simply click on the Category of Interest and begin exploring available resources. You can also search for resources by entering in a keyword into the search box in the upper right hand side.

https://www.napsgfoundation.org/all-resources/
How familiar are you with the CDC Social Vulnerability Index?
Community Resilience Committee
Goals, Objectives, and Accomplishments
Shane Hubbard (incoming chair, Sept 2020)
Goals and Objectives

• Provide information and materials, especially best practices and recommendations, to communities as it relates to resilience
  • Workshops, webinars, white papers
• Establish URISA as a leader in the discussion and producer of knowledge of geospatial data, technologies, and policies for community resilience

https://www.urisa.org/communityresilience
Accomplishments

• Participation on the Pandemic Task Force
  • Guidance on how GIS can and should be used to support a pandemic event

• Dr. Bandana Kar published, “Redefining Resilience in the Face of a Global Health Crisis” in the GIS Professional

• The CRT published a document titled ‘Responsibly Supporting the COVID-19 Pandemic Response’ to the URISA COVID-19 Resources page on April 3, 2020

• Supported a Public Health Track for GIS Pro 2020

• Developed a Community Resilience Story Maps
Future Directions

• Continue to produce additional articles highlighting community resilience best practices
• Quarterly Webinars on current topics
• Further collaborations nationwide
• Supporting two new working groups
  • Climate Change and Community Equity
  • Community Resilience and Sectoral Dependencies

https://www.urisa.org/
Center for Disease Control and Prevention
Social Vulnerability Index (CDC SVI)

Danielle Sharpe, MSc
CDC SVI Coordinator
November 17, 2020
Today’s Agenda

- Overview of the CDC Social Vulnerability Index
- Demonstration of the CDC Social Vulnerability Index
- Wrap-up and Questions
CDC SVI: AN OVERVIEW
Pandemic and All-Hazards Preparedness Act of 2006

- The Pandemic and All-Hazards Preparedness Act of 2006 cited public health and medical preparedness and response capabilities for emergencies as a critical need for the nation, for which CDC decided to build agency capacity for addressing social vulnerability to disasters and public health emergencies.

President George W. Bush signed the Pandemic and All-Hazards Preparedness Act into law on December 19, 2006.
The Purpose of the CDC Social Vulnerability Index

- Social vulnerability refers to the demographic and socioeconomic factors that adversely affect communities that encounter hazards.
- The CDC SVI tool was developed as a database and mapping tool to assist disaster management and public health officials with identifying locations of their most socially vulnerable populations over the disaster cycle.
**CDC SVI Data and Methodology**

- Composed of Census Bureau data on 15 variables grouped into four themes and a measure of overall SVI
- Constructed using percentile ranks to score areas from 0-1 on vulnerability
- Developed for the U.S. and each state at census tract and county levels
- Puerto Rico & tribal tracts

<table>
<thead>
<tr>
<th>Overall Vulnerability</th>
<th>Socioeconomic Status</th>
<th>Household Composition &amp; Disability</th>
<th>Minority Status &amp; Language</th>
<th>Housing Type &amp; Transportation</th>
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<tbody>
<tr>
<td></td>
<td>Below Poverty</td>
<td>Aged 65 or Older</td>
<td>Minority</td>
<td>Multi-Unit Structures</td>
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<td>Unemployed</td>
<td>Aged 17 or Younger</td>
<td>Speaks English &quot;Less than Well&quot;</td>
<td>Mobile Homes</td>
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<td>Income</td>
<td>Older than Age 5 with a Disability</td>
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<td>Crowding</td>
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<td>No High School Diploma</td>
<td>Single-Parent Households</td>
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<td>No Vehicle</td>
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<td>Group Quarters</td>
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</table>
Prepared County Maps
CDC SVI Utility and Use Cases

- The CDC SVI tool is used by several U.S. state and local governments as well as several private sector organizations. For example, it has been used to:
  - Assess social vulnerability and physical hazards (e.g., sea level rise, flooding, tornadoes, volcanic risk, house fires), hazard awareness, migrant and refugee populations, and health status
  - Map fire outbreaks and vulnerability metrics to target aid during emergencies (Lue & Wilson, 2017)
  - Plan hazard mitigation (Horney et al., 2017; Horney, Simon, Grabich, & Berke, 2015)
  - Assess social vulnerability and pathogenic disease outbreaks (Karaye & Horney, 2020; Khazanchi et al., 2020)
CDC SVI: A DEMONSTRATION
Resilience Analysis and Planning Tool (RAPT)

- Publicly available GIS tool to inform **strategies for preparedness, response, and recovery**.
- Allows **combined analysis** of Population / Community data, Infrastructure data, and Hazard data. All data is open source.
- **20 Commonly-Used Community Resilience Indicators** from peer-reviewed published methodologies.
- Infrastructure data from Homeland Infrastructure Foundation-Level Data (HIFLD) includes **location and characteristics**
- Hazard layers: **historic data, risk data, and real-time severe weather forecasts**
- **Analysis Tools**: Incident Analysis Tool, Select Population Summary, Query
- **Add Data**: Temporarily upload additional GIS layers
Community Resilience Indicator Analysis: Methodology to Identify Commonly Used Indicators of Community Resilience

1. Conducted Literature Review of Meta-Analyses
2. Cataloged 73 Distinct Methodologies/Indices
3. Created & Applied Inclusion Criteria
   - County-level
   - Generalized hazard risk
   - Pre-disaster focus
   - Quantitative
   - Public methodology
   - Public data
4. Identified 20 Commonly Used Indicators
5. Binned Indicator Data for Visual Display

- Australian National Disaster Resilience Index (ANDRI)
- Baseline Resilience Indicators for Communities (BRIC)
- Community Disaster Resilience Index (CDRI)
- Community Resilience Index (CRI2)
- Disaster Resilience of Place (DROP)
- Resilient Capacity Index (RCI)
- Social Vulnerability Index (SVI)
- The Composite Resilience Index (TCRI)
## RAPT Data Sets

<table>
<thead>
<tr>
<th>Population-Focused Indicators</th>
<th>Community-Focused Indicators</th>
<th>Infrastructure Data</th>
<th>Hazard Data</th>
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<tbody>
<tr>
<td><strong>CRIA Commonly Used Indicators</strong></td>
<td><strong>CRIA Commonly Used Indicators</strong></td>
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<tr>
<td>% Population without Health Insurance</td>
<td>Connection to Civic/Social Organizations</td>
<td>Nursing Homes</td>
<td>Flood Hazard Zones</td>
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<td>% Population Unemployed</td>
<td>Hospital Capacity</td>
<td>Hospitals</td>
<td>Tornado Paths</td>
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<td>% Population without a High School Education</td>
<td>Medical Professional Capacity</td>
<td>Urgent Care Facilities</td>
<td>Tropical Storms</td>
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<td>% Population with a Disability</td>
<td>Affiliation with a Religion</td>
<td>Public Health Depts.</td>
<td>Seismic Hazards</td>
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<td>% Population without Access to a Vehicle</td>
<td>Presence of Mobile Homes</td>
<td>Fire Stations</td>
<td>Wildfire</td>
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<td>% Population with Home Ownership</td>
<td>Public School Capacity</td>
<td>Emergency Medical Services (EMS) stations</td>
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<td>% Population over 65</td>
<td>Population Change</td>
<td>Local Law Enforcement locations</td>
<td>NOAA Layers</td>
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<td>% Population Single-Parent Households</td>
<td>Hotel/Motel Capacity</td>
<td>911 Service Area Boundaries</td>
<td>Current Watches/Warnings</td>
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<td>% Population with Limited English Proficiency</td>
<td>Rental Property Capacity</td>
<td>Mobile Home Parks</td>
<td>Hurricane Outlook: Atlantic</td>
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<td>Median Household Income</td>
<td>Places of Worship</td>
<td>Public Schools</td>
<td>Excessive Rainfall Outlook</td>
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<td>Gini Index: Income Inequality</td>
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<td>Private Schools</td>
<td>River Flood Outlook</td>
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<td><strong>Other Population Indicators</strong></td>
<td><strong>Colleges and Universities</strong></td>
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<td>At-risk electricity-dependent Medicare beneficiaries</td>
<td>Prison Boundaries</td>
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<td>Transmission Lines</td>
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<td>Electric Power Plants</td>
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<td>Wastewater Treatment Plants</td>
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<td>Pharmacies (RX Open)</td>
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<td>Dialysis Centers</td>
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<td>High Hazard Dams</td>
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RAPT Demonstration
Fema.gov/rapt
RAPT Benefits

- User-friendly research tool that helps visualize the interplay of population characteristics, infrastructure, and hazards
- Basis for community resilience profile:
  - Multi-level analysis: regional, state, local, tribal.
- Support to emergency managers:
  - Inform capability targets for THIRA/SPR, exercises, and EOPs
  - Real-time analysis of severe weather events
  - Prioritize areas for evacuation
  - Identify at-risk infrastructure assets
  - Helps prioritize recovery strategies
Questions or Comments?

www.fema.gov/rapt

FEMA-TARequest@fema.dhs.gov
Decrypting Risk, Resilience, and Vulnerability Indices

Report out and Demonstration
Background

Challenge

In recent years, there has been an increase of available indices that measure risk, resilience, and vulnerability. Although these indices have provided valuable insights into our communities, they have also prompted some confusion over which index to use, when to use it, and for what purpose.

Response

NAPSG Foundation, in partnership with URISA's Community Resilience Task Force, launched a study to understand available and emerging risk, resilience, and vulnerability indices as the basis for developing guidance to help the emergency management community match business needs with specific indices.
The Guidance

The goal of this guidance is to assist the emergency management/public safety community in understanding the risk, resilience, and vulnerability indices that are available today, the data and methodologies behind those indices, and their relevance for use in preparedness and response.

To help users select the appropriate index to answer their specific questions.
Guidance Tool Demonstration
https://arcg.is/1X0aTu
Explore available resources on available indices and tools:

• CDC Social Vulnerability Index

• Resilience Analysis and Planning Tool (RAPT)
  https://www.fema.gov/emergency-managers/practitioners/resilience-analysis-and-planning-tool

• Review our Guidance and Provide Feedback!
  https://arcg.is/1X0aTu
  • How are you using risk, resilience, vulnerability data and indices?
  • What enhancement would you like to see in the tool?

Share your Feedback: https://arcg.is/1fTzSW
What's Next?

• Next PrepTech Talk:
  • Part 2: Decrypting Risk, Resilience, Social Vulnerability Data & Indices (February 2021)

• Events:
  • InSPIRE – Annual flagship event. Virtual! (April 2021)

https://www.napsgfoundation.org/events/
Thank you!

Questions?

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